UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/302,407	04/30/1999	FRANK W. FABIAN	57472/3	6840

7590 01/29/2003

BLAKE CASSELS & GRAYDON
INTELLECTUAL PROPERTY GROUP
BOX 25 COMMERCE COURT WEST
TORONTO, M5L1A9
CANADA

EXAMINER
HARVEY, DIONNE

ART UNIT	PAPER NUMBER
2643	

DATE MAILED: 01/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/302,407	Applicant(s) Fabian
	Examiner Dionne Harvey	Art Unit 2643

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-47* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-22, 24, 25, and 27-47* is/are rejected.

7) ☒ Claim(s) *23 and 26* is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

REXFORD BARNIE
PRIMARY EXAMINER

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 2
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Objections

Claims 43 and 46 are objected to because of the following informalities: improper claim dependency. Appropriate correction is required.

Claim Rejections - 35 U.S.C. § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 6 and 8 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. With regard to claim 6, the "nominal periphery" and "rebate" are not disclosed in the applicants specification. With regard to claim 8, the "intermediate member" is not clearly disclosed in the applicant's specification.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 13 recites the limitation "said rigid member" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim 17 recites the limitation "the axis" in line 2 and "distal end member" in line 7. There is insufficient antecedent basis for this limitation in the claim.

Claim 27 recites the limitation "the axis" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 45 recites the limitation "said spline" in lines 2 and 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 46 recites the limitation "said spline" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 U.S.C. § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1,8,16,20 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamamoto (US 5,909,015).

Regarding claim 1, Yamamoto teaches a magnetically permeable front plate(35) of a magnetic flux assembly, a loudspeaker having a diaphragm(17), voice coil(27), pole piece(39), and magnet(33) wherein the plate has a opening(41) sized to fit about the pole piece and defining a gap for accommodating movement of the voice coil therebetween and the top plate has venting(43-1) therein to permit fluid communication through the plate to the voice coil.

Regarding claim 8, Yamamoto teaches a pole piece(39); opposing member(35); as best understood with regard to the U.S.C. 112 first paragraph rejection above, the magnet (33) is believed to satisfy the "intermediate member" limitation of the claim; a magnetic flux path assembly having an airflow path extending between the dust cap(15) cavity and external ambient permitting displacement of air; the airflow path defined in the opposed member (43-1) external to the gap(41) for encouraging cooling of the opposed member.

Regarding claim 20, in figure 2, Yamamoto teaches that the venting passages include flow director elements (see the opposing ends of the venting passages which differ in their cross-sectional areas to provide air intake or air out take).

Regarding claims 16 and 28, Yamamoto teaches the structure of the magnetic assembly, as claimed, including an annular magnet with annular faces and inner wall defining an eye, a first plate (35) mounted to one annular face and second plate(37) mounted to the other annular face; a pole piece(39) extending through said eye from the second to the first plate; a voice coil disposed within a gap; a magnetic flux path assembly having a space(41) between the pole piece(39) and inner wall of said magnet; the pole piece having a passage way(40) defined therein permitting

communication between the dust cap cavity and space; the first plate(35) having venting means(43-1) permitting fluid communication between the space and external ambient.

4. Claims 8-12 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Engholm (US 2,261,111)

Regarding claim 8, Engholm teaches a magnetic flux assembly including a pole piece(13); an opposing member(12) placed in spaced relationship from the pole piece; and as best understood with regard to the U.S.C. 112 first paragraph rejection above, an intermediate member (36) mounted to maintain the position of the polepiece and opposed member, relative to each other; a magnetic flux path assembly having an airflow path extending between the dust cap(30) cavity and external ambient permitting displacement of air; the airflow path defined in the opposed member (35) external to the gap for encouraging cooling of the opposed member.

Claim 9, Engholm teaches that the opposed member(12) is a plate having an inner and outer periphery; a closed inner periphery and a gap, lying between the periphery and pole piece, a portion of the airflow path(35) being formed in the plate and is segregated from the opening.

Claim 10, Engholm teach a disc shaped plate in which the inner and outer peripheries are circular and concentric.

Claim 11, in figure 2, Engholm shows that the venting includes an array of apertures spaced outwardly from and having a pith circle concentric with the inner periphery.

Claim 12, Engholm teaches that another portion of said periphery defines a portion of the airflow path defined in the opposed member.

Claim 22, in the absence of clear structural limitations, the cylindrical opening (35) has been broadly interpreted as a tube for urging airflow toward the voice coil, as broadly claimed.

Claim Rejections - 35 U.S.C. § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Engholm (US 2,261,111) in view of Engholm (US 2,261,110).

Regarding claim 1, Engholm '111 teaches a magnetically permeable front plate(12) of a magnetic flux assembly, a loudspeaker having a diaphragm(16), voice coil(14), and pole piece(13) wherein the plate has a opening sized to fit about the pole piece and defining a gap for accommodating movement of the voice coil therebetween and the top plate has venting(35) therein to permit fluid communication through the plate to the voice coil.

Engholm '111 does not specifically teach that the magnetic circuit includes a magnet(32).

In figure 4, Engholm '110 teaches that it is well known in the art to construct a magnetic circuit including magnet(40). It would have been obvious for one of ordinary skill in the art at the time of the invention to alter the magnetic circuit of Engholm '111 to include a magnet instead of a field coil, as an alternate design choice.

Claim 2, Engholm'111 teaches that venting is segregated from said inner periphery.

Claim 3, Engholm'111 teaches that the plate is in the form of a disc in which the inner and outer peripheries are circular.

Claim 4, figure 2, shows that the venting includes an array of apertures spaced outwardly from and having a pith circle concentric with the inner periphery.

Claim 5, Engholm'111 teaches circular apertures.

6. Claims 7,14,15,18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (US 5,909,015) in view of Button (US 5,042,072).

Claim 7, Yamamoto does not specifically teach that the plate have a crenellated profile.

In figures 8 and 9, and discussed in column 3, lines 6270, Buttons teaches a magnetic structure wherein the top plate may have a crenellated profile. It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Yamamoto and Button to provide passages in the top plate thereby permitting the passage of air for cooling.

Claim 14, the combination of Yamamoto and Button teaches a plurality of reliefs defining at least part of an air flow path. The combination of Yamamoto and Button does not specifically teach that the reliefs are located in the opposed member. However, it would have been obvious for one of ordinary skill in the art at the time of the invention to provide reliefs in the opposed member instead of the polepiece, as an alternate design choice, since either would provide an airflow path for facilitating cooling of the magnetic circuit.

Claim 15, In figure 9, Button teaches that the magnetic circuit may be constructed such that the polepiece includes a magnet(310).

Claim 18, Button teaches passages(30) formed in the periphery of cap(300).

Claim 19, Button teaches that cap-300 has a round circular periphery and passages are formed through the end o f the cap (see figure 8).

7. Claims 21,24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (US 5,909,015) in view of Nordschow (US 5,357,586).

Regarding claim 21, Yamamoto does not specifically teach the use of a deflector for directing airflow toward the voice coil.

In figures 4a and 4b, Nordschow teaches a magnetic circuit constructed such that it includes at least one deflector (see spacers-42) which also provide some degree of deflection of airflow(60) toward the voice coil(18). It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Yamamoto and Nordschow, thus

incorporating the pole openings(60), body(40) and spacers(42) of Nordschow into the pole opening of Yamamoto, thereby providing and additional air flow path for facilitating the exchange of air between the ambient environment, coil former and back of the speaker, as discussed by Nordschow.

Regarding claim 24, The combination of Yamamoto and Nordschow teaches venting means (43-1; see '015 ref.) In the nature of a relief, as broadly claimed, defined in the plate, the relief extending radially away from the pole piece (see figure 2) and permitting air to traverse the plate; and at least one air guide (42; see '586 ref) mounted to the plate for directing air.

Regarding claim 25, The combination of Yamamoto and Nordschow teaches an array of reliefs (see figure 2 in Yamamoto) and an array of air guides (see figure 2 in Nordschow).

8. Claims 28-35,42 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Engholm (US 2,261,111) in view of Nordschow (US 5,357,586).

Regarding claim 28, Engholm teaches a magnetic path flux assembly having a diaphragm(16); voice coil(14); dust cap(30); supporting structure(17) for mounting the diaphragm to the flux assembly; a first plate(12) and venting(35) in the first plate to permit fluid communication between the space and external ambient. Engholm does not teach the specific structure of the magnetic circuit, as claimed i.e., an annular magnet and second plate.

In figures 4a, 4b, Nordschow teaches that it is well known in the art to construct a magnetic circuit including an annular magnet(32) having first(30) and second(36) plates mounted

to the opposed annular faces of the magnet. Therefore, It would have been obvious for one of ordinary skill in the art at the time of the invention to substitute to annular magnet, top and bottom plate of Nordschow for the field coil assembly of Engholm, as an alternate design choice.

Claim 29, Engholm teaches that venting is segregated from said inner periphery.

Claim 30, Engholm teaches a magnetic flux path wherein the periphery of first plate(12) includes at least one sector of a circular arc; and a relief(35) defined therein.

Claim 31, The combination of Engholm and Nordschow teaches a hollow cylinder pole having a base mounted to the second plate(36), a distal end(43) located within the voice coil(18) and wall(34) extending between the ends; an open distal end, and at least one port(60) defined in the wall(34) to permit fluid airflow. The combination of art does not specifically teach that the base end is closed. However, it would have been obvious for one of ordinary skill in the art at the time of the invention to close the base of the pole, thereby redefining the path of air flow in the magnetic circuit since it is understood that the airflow path may be defined in a variety of ways, all of which being effective in cooling the magnetic circuit.

Claim 32, Nordschow teaches a pole having a passageway, one end of which terminates at a port formed in the distal end, the end of the passageway terminating at a port defined in a portion of the pole wall (see figure 1 of Nordschow).

Claim 33, The combination of art does not specifically teach that the bore in the polepiece is formed at an inclined angle. However, it would have been obvious for one of ordinary skill in the art at the time of the invention to provide any variety of orientations for the passages, thereby

redefining the path of air flow in the magnetic circuit since it is understood that the airflow path may be defined in a plurality of ways, all of which being effective to cool the magnetic circuit.

Claim 34, Nordschow teaches a first bore extending inwardly from the distal end, and a second bore(60) intersecting the first bore, as claimed.

Claim 35, Nordschow teaches a cross bore.

Regarding claim 42, Engholm teaches a diaphragm assembly(16) having a movable membrane and frame(18), a dust cap(30), voice coil former(15); voice coil(14); cavity within the dust cap and former; a magnetic flux path having a flux land(12); pole piece(13); a suspension(17) to permit the voice coil to reciprocate relative to said framing; the flux land(12) located in spaced relationship from the pole piece(13) to define a gap for accommodating the voice coil(14); the loudspeaker having an internal space defined between the pole piece(13) and flux land(12); and the flux land(12) having venting(35) let therethrough to permit fluid communication between the space and external environment.

Engholm does not specifically teach that the magnetic circuit includes a magnet(32) for developing a magnetic flux across the gap or that the pole piece includes a passageway defined therein having a port opening on said cavity and another port opening on said flux land.

In figures 4a, 4b, Nordschow teaches that it is well known in the art to construct a magnetic circuit including a flux land(30), pole piece(34) and magnet(32) for developing a magnetic flux. Nordschow further teaches that the magnetic circuit may be constructed so as to provide a cooling system for the driver motor of the speaker. The cooling system of Nordschow

includes a pole piece(34) having a passageway(37) defined therein having a port opening on the cavity(52) beneath the duct cap, and another port opening(60) on flux land.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Engholm and Nordschow. The magnetic circuit of Engholm may be altered to include a magnet instead of a field coil, as an alternate design choice. While, the pole piece may be altered to include a passage way having a port opening which communicates with the cavity beneath the dust cap and another port opening which communicates with the magnetic gap, for the purpose of inducing the flow of air into and out of the driver motor of the loudspeaker in response to the vibratory motion of the speaker cone, thereby cooling the voice coil and pole piece.

Regarding claim 47, The limitations of claim 47 are rejected for the same reasons set forth in the rejection of claim 42, above.

9. Claims 36-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Engholm (US 2,261,111) in view of Nordschow (US 5,357,586) as applied to claim 28, and further in view of Button (US 5,042,072).

Claims 36 and 37, The combination of Engholm and Nordschow does not specifically teach that the pole piece is constructed to have a distal end; a medial end, narrower than the distal end; and transition wall. However, as shown in figure 3, Button teaches that it is well known in the art to provide a pole piece, shaped as claimed, having a distal end; a medial end narrower

than the distal end; and transition wall. It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Engholm, Nordschow and Button, thereby providing a pole piece with a narrower medial portion, as an alternate design choice.

Claim 38, Button teaches a pole piece having a base(140) mounted to the second plate (140) and distal end; the distal end having a sidewall extending parallel to the axis and at least one relief (210) defined in the sidewall; the relief having a first end defined in the end face and second end giving onto said enclosed space, as claimed.

Claim 39, shown in figures 2 and 5, Button teaches "grooves" formed in the distal end, as broadly claimed.

Claim 40, Engholm teaches at least one first plate relief(35) defined in the first plate whereby the venting is at least partially defined by first plate relief.

Claim 41, Engholm teaches that the plate relief is an array of slots.

10. Claims 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Engholm (US 2,261,111) in view of Nordschow (US 5,357,586) as applied to claim 42, and further in view of Raj (US 5,461,677).

Claim 43, the combination of Engholm and Nordschow does not specifically teach that a magnetically permeable suspension fluid is introduced into said gap. Raj teaches that the use of a magnetically permeable suspension fluid in a magnetic gap, is well known in the art. It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the

teachings of Engholm, Nordschow and Raj thereby introducing a magnetically permeable suspension fluid into the magnetic gap, for the purpose of transferring heat from the voice coil and also for dampening the movement of the coil.

Claim 44, Nordschow teaches that the pole piece is a hollow pole and a port opening on said cavity and port opening on said space, as claimed.

Allowable Subject Matter

11. Claims 23 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statements for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dionne Harvey whose telephone number is (703) 305-1111. The examiner can normally be reaches on Monday through Friday from 8:30am to 6:00pm.

Any responses to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, DC 20231

or faxed to:

(703) 308-6306, for formal communications for entry

Or:

(703) 308-6296, for informal or draft communications, please label "PROPOSED" or "DRAFT".

Hand delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor(Receptionist)

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz, can be reached at (703) 305-4708.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dionne Harvey whose telephone number is (703) 305-1111.

D.H.

January 22, 2003

REXFORD BARNIE
PRIMARY EXAMINER